Commute Atlanta Program (2004-2007)

- **Phase I** - Recruit households, instrument vehicles, and collect baseline travel behavior
- **Phase 2** - Implement cent/mile incentives
  - Q1 (5 ¢/mile), Q2 (10 ¢/mile), Q3 (15 ¢/mile)
    - Participants that carpool, take transit, or travel more efficiently receive financial incentives
- **Phase 3** - Implement congestion-based pricing incentives
  - Participants that reduce travel or shift out of peak period congestion receive financial incentives
- Evaluate consumer response to the economic stimulus across demographic and socioeconomic strata

2003 GT Trip Data Collector

- CPU: 386 Linux
- Vehicle speed sensor
- Global positioning system
- Onboard diagnostics (OBD)
- Engine computer connection
- Cellular transceiver
- Second-by-second speed and position provide origin, destination, and route

Vehicle Activity Analysis

Activity of Vehicle T01011
Number of Trips by Roadway Segment
74 Days
313 Trips

Commute Atlanta Data Collection

- 1.5 million trips, 425,000 vehicle hours, 11 million vehicle-miles

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<thead>
<tr>
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<tbody>
<tr>
<td>Vehicles Monitored</td>
<td>460</td>
<td>430</td>
<td>390</td>
<td>300</td>
<td>300</td>
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<td>Trips Collected</td>
<td>365,335</td>
<td>331,164</td>
<td>292,494</td>
<td>226,982</td>
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<td>Vehicle Hours Monitored</td>
<td>105,798</td>
<td>95,902</td>
<td>85,494</td>
<td>68,065</td>
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Phase II Household Mileage Change

- 102 households participated in Phase II pricing
  - Q1 (5 ¢/mile), Q2 (10 ¢/mile), Q3 (15 ¢/mile)
- 80 households participated in all three quarters
  - 17 households demonstrated consistent mileage reduction across all three quarters
  - 8 households began to reduce mileage 2nd quarter
  - 10 households began to reduce mileage 3rd quarter
  - 10 households demonstrated a consistent mileage increase across all three quarters
  - 35 households displayed no consistent patterns in mileage increase or decrease
Quarterly VMT
55 households (analysis complete)

Commute Atlanta Vehicle Turnover
(104 Vehicles Out, 88 Vehicles In)

1st Quarter Response (-7.3%)
- Holiday season
  - Thanksgiving and Christmas travel
- Gas prices dropping during baseline from $1.90 to $1.56
- Immediately prior to the pricing, post hurricane Katrina (August into October), gas prices jumped to $3.20
  - VMT reductions noted in September prior to pricing
  - The $1.50/gallon increase is around $0.075/mile
- Pricing begins in October at $0.05/mile
- Gas prices drop to $1.90/gallon by December
- Net VMT reduction was 7.3%

2nd Quarter Response (-4.3%)
- Winter season
- Gas prices rose steadily during the baseline period from $1.50 to $2.00
- Gas prices fairly stable during pricing period
  - Prices went from $2.20 to $2.00 to $2.40
  - Prices rose right at end of quarter to $2.40
- Incentive increased to $0.10/mile
- Net VMT reduction was 4.3%
  - Entire reduction comes from January
General Response Discussion

- VMT exhibits seasonal variability
- Gas price was volatile during baseline and pricing
  - Pricing dominates the total incentive in 2nd and 3rd quarters relative to gas price change
- For each quarter, a decrease in VMT appears to be correlated with increasing gas prices and incentives, with a potential rebound effect
  - VMT reductions are highest in 1st and 3rd quarters with higher gas prices
  - VMT reductions noted in the first month of 2nd and 3rd quarters (when incentives increased by 5 cents/mile)

Incentive Contribution

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<tr>
<th>Month</th>
<th>Pricing Incentive</th>
<th>Gas Incentive</th>
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<tbody>
<tr>
<td>Oct</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Nov</td>
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<tr>
<td>Dec</td>
<td>4.00</td>
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<td>Mar</td>
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<tr>
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<tr>
<td>May</td>
<td>14.00</td>
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<tr>
<td>Jun</td>
<td>16.00</td>
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Variability in Household VMT Change (5 Months, 66 Households)

- Spring/summer season
- Gas prices were stable during baseline period at around $1.90 to $2.10
- Average gas prices rose again during first month of pricing from $2.40/gallon to $2.80/gallon
- Incentive increased to $0.15/mile
  - Might be comparable to a $3.00/gallon price increase
- Net VMT reduction was 7.5%
  - Significant reduction noted in April
  - VMT increased in May
  - Reduction also noted in June
**Pricing Response Uncertainty**

- Significant variability in household response coupled with small sample sizes across demographic groups
- No hard conclusions can be drawn yet
  - Case study approach currently underway
  - Control for changes in demographics such as HH size, employment, change in school locations, etc.
  - Comparing intraregional vs. extra-regional changes
  - Changes are being compared by trip purpose
- New project includes in-home interviews of 16-20 Commute Atlanta households to review travel patterns and response to incentives

**Real Time Congestion Pricing Summer 2007**

- Instrument vehicles for 120 to 150 commuters that regularly use southbound I-75, I-85, GA400 corridors
- Upgraded equipment allows real-time tracking and in-vehicle communication
- Household recruitment in April, June to August pricing
- Real-time congestion pricing
  - $0.40/mile under congestion vs. $0.15/mile free flow
- If households reduce mileage or shift their trips out of congested periods they receive financial reward

**Commute Atlanta In-Vehicle Data Terminal Displays Pricing Info**

**Speed vs. Speed Limit Feedback**

| +5mph (yellow) and +10mph (red) |

**Commute Atlanta Summary**

- Systems provide a wealth of useful, high-resolution data
  - 2.5 Tb of data
- Atlanta studies are evaluating:
  - Pricing impacts on household travel behavior
  - Driver behavior and safety
  - Travel demand modeling implications
  - Use of data in traffic operations management
  - Speeding, vehicle emissions, and fuel consumption
    - Start/soak and VSP reports forthcoming from EPA
- Tremendous data mining opportunities remain